

### In the Claims

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**44.(canceled)**

45.(canceled) A method for noninvasive analysis of blood comprising the steps of:

- irradiating blood in a big vein associated with an underside of a patient's tongue with radiation having at least one frequency or wavelength;
- detecting a response from the blood irradiated in the irradiating step;
- calculating a concentration of a blood component, a value of a blood parameter or a mixture or combination thereof from the response.

1      46.(canceled) The method of claim 45, further comprising the step of:  
2      displaying the response, the concentration and/or the value from the calculating step.

1 47.(canceled) The method of claim 45, wherein the detecting step comprises the step of:  
2 utilizing one or a combination of techniques selected from the group consisting of reflectance  
3 technique, confocal technique, scanning confocal technique, polarization techniques, interferometry,  
4 optoacoustics, low coherence interferometry and reflectometry, techniques based on speckle  
5 measurements, fluorescence technique, Raman scattering technique, and two or multi-photon  
6 techniques.

1      48.(canceled) The method of claim 45, wherein the wavelength of the radiation is from about 200  
2      nanometers to about 20 microns.

1 49.(canceled) The method of claim 45, wherein the radiation has comprises a single wavelength or  
2 frequency or a plurality of wavelengths or frequencies.

1 50.(canceled) The method of claim 45, wherein the response corresponds to a concentration of  
2 hemoglobin in the blood and the wavelength of the radiation is selected from the group consisting  
3 of 548 nm, 568 nm, 587 nm, and 805 nm, from about 400 nm to about 640 nm and from about 1120  
4 nm to about 1130 nm.

1      51.(canceled) The method of claim 45, wherein the blood component is selected from the group





1 66.(canceled) The apparatus of claim 63, wherein the exogenous substance are particles having a  
2 size from about 0.1 nanometer to about 10 microns.

1 67.(canceled) The apparatus of claim 57, wherein the radiation is selected from the group consisting  
2 of microwave radiation, radiofrequency radiation, ultrasound radiation, and low-frequency  
3 electromagnetic radiation.

1 68.(canceled) The apparatus of claim 57, further comprising:  
2 a device for generating a static electric or magnetic field.

1 69.(previously presented) An apparatus for noninvasive blood analysis comprising:  
2 right side and left side sections adapted to engage one or more teeth on each of a right side  
3 and left side of a patient's jaw,  
4 two transition sections extending downwardly from each of the side sections,  
5 a middle section interposed between the two transition sections adapted to be proximate to  
6 or in contact with an underside of a patient's tongue, where the middle section includes;  
7 a emitter, and  
8 a receiver,  
9 where the emitter and the receiver are adapted to be proximate or in contact with a  
10 surface of a tissue over a big vein associated with an underside of the patient's  
11 tongue;  
12 a light generation/delivery system including a light source capable of generating at least one  
13 frequency of light, and a light conduit interconnecting the light source with a radiation outlet, where  
14 the system is adapted to deliver radiation to blood in the big vein; and  
15 a detector/analyzer system including a detector adapted to detect a response from the  
16 irradiated blood via a response inlet and an analyzer adapted to convert the detected response into  
17 a concentration of a blood component and/or a value of a parameter of the blood.

1 70.(currently amended) The apparatus of claim 5969, further comprising:  
2 a plurality of emitters and receivers, located in pairs on a right hand side and a left side of the

3 middle section.

1 71.(currently amended) The apparatus of claim 6869, further comprising:  
2 a display adapted to display the response, the concentration, and/or the value.

1 72.(currently amended) The apparatus of claim 6869, wherein the wavelength of the radiation  
2 is from about 200 nanometers to about 20 microns.

1 73.(currently amended) The apparatus of claim 6869, wherein the radiation has comprises a  
2 single wavelength or frequency or a plurality of wavelengths or frequencies.

1 74.(currently amended) The apparatus of claim 6869, wherein the detector is capable of  
2 detecting data derived from one or a combination of techniques selected from the group consisting  
3 of reflectance technique, confocal technique, scanning confocal technique, polarization techniques,  
4 interferometry, optoacoustics, low coherence interferometry and reflectometry, techniques based on  
5 speckle measurements, fluorescence technique, Raman scattering technique, and two or multi-photon  
6 techniques.

1 75.(currently amended) The apparatus of claim 6869, wherein the response corresponds to  
2 hemoglobin and the wavelength is selected from the group consisting of 548 nm, 568 nm, 587 nm,  
3 805 nm, from about 400 nm to about 640 nm and from about 1120 nm to about 1130 nm.

1 76.(currently amended) The apparatus of claim 6869, wherein the blood component is selected  
2 from the group consisting of hematocrit, hemoglobin, glycosylated hemoglobin, hemoglobin and  
3 glycosylated hemoglobin, glucose, cholesterol, oxy-hemoglobin, deoxy-hemoglobin, and carboxy-  
4 hemoglobin.

1 77.(currently amended) The apparatus of claim 69, wherein the blood component is an  
2 exogenous substance is selected from the group consisting of a drug, a dye or other reporter in  
3 molecular state or a particle made of liquid, gas, or solid material including polymer, metal,  
4 semiconductor, dielectric, or a combination of liquid, gas, or solid materials, and a layered structure.

1 78.(currently amended) The apparatus of claim 7477, wherein the exogenous substance is  
2 selected from the group consisting of indocyanine green and Evans blue.

1 79.(currently amended) The apparatus of claim ~~75~~77, wherein the exogenous substance are  
2 particles having a size from about 0.1 nanometer to about 10 microns.

1 80.(currently amended) The apparatus of claim 6869, wherein the radiation is selected from  
2 the group consisting of microwave radiation, radiofrequency radiation, ultrasound radiation, and low-  
3 frequency electromagnetic radiation.

1 81.(currently amended) The apparatus of claim 6869, further comprising:  
2 a device for generating a static electric or magnetic field.